SLEEP AND SLEEPLESSNESS.

The Every-Day Help Series.

SLEEP AND SLEEPLESSNESS

BY

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PREFATORY.

IN the following pages I have tried to embody the leading facts about sleep, with such reflections and suggestions as have occurred to me in the course of investigations relating to that rhythmical function of life. I venture to hope they will be of value to the ordinarily intelligent reader, and not wholly unworthy of the attention of the student and practitioner who are concerned, the one to comprehend, the other to relieve, the troubles which so commonly arise in connection with this *state* of the organism—mental and physical. I have aimed at nothing beyond a simple statement of the conclusions at which I have myself arrived.

JUNE, 1879.

J. M. G.

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SLEEP.

All that is certainly known about sleep as a state, or function, of the organism, may be told in a few sentences. The information recently acquired is chiefly negative. Sleep is not, as was once supposed, a condition of the brain and sense-organs, in which activity has been suspended by the pressure produced by congestion; that is too much blood in the vessels—arteries or veins—of the cranium. Nor is it, as contemporary physiologists and experimenters have thought and taught, an arrest of activity by diminished supply, or too little blood circulating in the vessels, of the brain. Neither is the phenomenon of natural sleep produced by any chemical or chemico-physical change in the blood itself, which might be supposed to impede or impair the cerebral functions.

What is called "determination of blood to the head" may occasion "heaviness" or "stupor," but it will be of the sort which tends to apoplexy, not to sleep. When sleep follows a drunken bout, or

a blow on the head, or seems to be produced by "compressing the vessels of the neck,"[1] the immediate condition set up is morbid. The sleep that sometimes occurs later on in this experiment is reactionary, and intended by nature to be restorative. Again, if the brain and cerebral centres are deprived of their blood-supply by failure of the heart's action, as in faintness, or by loss of blood from any cause, there will be yawning and "sleepiness;" but the state induced is not sleep. It is one of exhaustion tending towards syncope and death.

If the blood be poisoned with carbonic acid, or if it be insufficiently supplied with oxygen—for example, from repeatedly breathing the same atmosphere in a close or crowded room, or from some defect in the number or efficiency of the oxygen-carriers, the red corpuscles of the blood, as when these are affected, perhaps shrivelled and contracted, by the presence of certain chemical properties in the blood, or during the administration of chloroform, or after taking chloral—insensibility may supervene, but not sleep; and if sleep follows, it is easy to recognise the difference of the two states. That such changes in the blood pressure

[1] Dr. Fleming, in a Paper in the *British and Foreign Med. Chirurg. Review*, 1855, Vol. I., p. 529.

as are possible[1] within the hard walls of the skull during health are not capable of producing the alternating states of sleep and wakefulness may be concluded from the fact that far more considerable changes take place in disease without the results too hastily attributed to them. The French physiologist, Vulpian,[2] has demonstrated what many English, Continental, and American physicians had long previously conjectured, namely, that the modifications of blood supply and pressure, which have in turn been supposed to be the causes of sleep or wakefulness respectively, are in truth the consequences or concomitants of those states. In short, the changes observed to take place in the rate of the circulation and the size of the vessels of the brain are the results, not the causes of sleep.

For example, under certain circumstances, the suspension of activity in the brain may occur simultaneously with, or induce, a slowing of the flow of blood through the vessels, which seems to indicate stagnation or congestion. More commonly it happens that inaction of the brain and

[1] *The Causation of Sleep, a Physiological Essay*, by James Cappie, M.D., Edinburgh, 1872.

[2] *Leçons sur l'Appareil Vaso-moteur (Physiologie et Pathologie), faites à la Faculté de Médecine de Paris*, par A. Vulpian. Tome second, 144—155.

cerebral nerve-centres tends, as the cessation of functions generally tends, in all parts of the body alike, to diminish the demand for highly oxygenated blood, and, in obedience to the law which makes supply dependent on demand, comparative bloodlessness of the part resting occurs. This is obviously a very different thing from anæmia or bloodlessness as a *cause* of sleep. It is the simple consequence of the natural law which governs the circulation throughout the body; and probably the condition of anæmia is established in the thought and sense organs, during sleep, as in other parts which are ordinarily the seat of active function; but the blood state is the effect of the sleep state, not its cause.

"The blood is the life," or life sustainer. It carries the elements of nutrition derived from the food, and oxygen abstracted from the air, to every part of the organism. The circulation is due principally to the pump-like action of the heart, which forces the blood into the arteries at one end of the circuit, or system of vessels, and draws it out of the veins at the other end; but the distribution of blood to particular organs is due to physical and other changes which take place in a part of the circuit which lies midway between the arteries and veins, namely, the capillaries. These vessels form

a network permeating every region of the body, and bringing the blood into due relation with the tissues which require to be nourished. The quantity of the fluid admitted to any organ or tissue depends in large measure on the calibre of the smaller arteries, or arterioles, which bring the blood to the local network, and their size is regulated by the action of a special system of nerves which act upon these vessels, and either cause them to contract so as to admit only a small stream, or relax to allow a larger volume to pass. The nerves fulfilling this important function are directly influenced by the activity of the part, so that when the organ is inactive the supply is reduced. The tissues are endowed with a power of taking up from the blood just what they require, allowing the rest to pass on. If the demands of an organ are large, or the blood flows to it in too small quantity, there will be a reflex nerve action to procure more rapid supply, and the flow will be quickened and the size of the vessels enlarged. When an organ is in morbid action the commotion occasioned is so great that the general pulsation is accelerated, and while what is called "inflammation" occurs in the organ, "fever," or febrile excitement, is set up throughout the body. The brain is in the same position as regards blood supply as every other organ, and

modifications of the circulation through that organ are determined by the common law. When the organs of thought and special sensation sleep the supply is diminished, and the circulation quickly becomes slow.

Some authorities, whose opinion is of great weight—Mr. Durham,[1] of London, and Dr. Hammond,[2] of New York, prominently among the number—have conceived that nutrition of the brain goes on chiefly during sleep. They contend, with much plausibility, that when the blood courses rapidly through the vessels it is more likely to be taking up the debris of used tissue than depositing new material; and that when in sleep it passes more slowly through the tissues it gives off the elements required to replace what has been lost, Mr. Durham calls the rapid flow of wakefulness the "circulation of function;" the slower current which passes during sleep he designates the "circulation of nutrition." There is much to be said for this view of the matter, and it is in accordance with the physical law that fluid passes rapidly

[1] *The Physiology of Sleep.* By Arthur L. Durham. Guy's Hospital Reports, 1860, Vol. VI., 149.

[2] *Wakefulness: with an Introductory Chapter on the Physiology of Sleep;* also, *Sleep and its Derangements.* By William A. Hammond, M.D., Philadelphia.

through the walls of a membranous tube into a rapidly-flowing current; while, on the other hand, the fluid which is in the vessel itself is more likely to transude through its walls when it is flowing slowly than when it passes on rapidly. Against this, however, we must, I think, set the fact that plants do not grow while they sleep during the winter, and, so far as we can judge by analogy, nutrition is more likely to proceed rapidly when an animal organism is in action than when it lies dormant. Those who think the brain is nourished chiefly during sleep seem to me to regard that state as something essentially different from the *rest* of nature.

The alternations of day and night, of summer and winter, form part of the system of natural life. The animal world has set apart for it, and therefore certainly needs, rhythmical periods of activity and repose. Darkness suggests, and to a people in a state of nature enjoins, the cessation of active exercise. Night is the time for rest. If it were also the period of nutrition—wherein the tissues take up the food-elements from the blood and their cells are nourished—there should be less demand for food on awakening than at any other time; or, if the digestive organs then required a fresh supply in order to elaborate material and enrich the blood for future needs, the indications

for food would be purely visceral. This is not, we know, the fact. When the blood is deficiten in the elements of nutrition the brain betrays instant consciousness of its poverty. This was admirably shown by that distinguished and practical observer, the late Marshall Hall, in his elucidation of what he designated "The Temper Disease," a slight but significant variety of which malady occurs when man or any animal is kept waiting for his meal beyond its accustomed period. The irritation thus produced is generally allayed with such celerity as forbids the belief that there is usually a long interval between taking a supply of food into the stomach and brain nourishment.

Again, if sleep were the time for brain-feeding, drowsiness would not take place until after the lapse of an interval sufficient to allow of digestion, because nutrition cannot begin until that process is, at least, nearly complete; some of the most important elements of the food being the last to become soluble. Food must be elaborated in the organs of digestion before it can enrich the blood, whereas we know the tendency to sleep which follows upon a meal is strongest immediately, or very soon, after eating. In short, food acts too rapidly as a restorative to the brain and sense organs during wakefulness to support the theory that sleep is the

period of nutrition. Moreover, it is not uncommonly found that the brain cannot rest if the stomach be overloaded, or the blood charged with too rich or abundant food-material; while a nap before a heavy meal refreshes, and invigorates and promotes brain and nerve nourishment. If, as some have supposed, the cerebrum and sense and nerve centres slept when exhausted, laid in a new stock of potential energy during sleep, and awakened when the reserve was complete,[1] heavy brain-work carried to the verge of exhaustion should conduce to sleep, and the recuperated mind-organ would awake in high activity; neither of which assumptions are supported by experience. The over-wearied brain-worker is commonly unable to sleep, and few men awake with their intellectual energies in the fullest state of efficiency, or are fit for the business of the day until they have fed. It is, on the whole, probable that the brain, like other parts of the organism, requires *rest* as well as nutrition, and that the two needs are not satisfied by the same state. Sleep provides the repose, nutrition goes on side by side with work. I cannot, of course, affirm that the conclusion at which

[1] A theory propounded by Sommer, based on the experiments of Pettenkofer and Voit, as to the comparative consumption of oxygen during quiescence and in exercise.

I have arrived is the true solution of this interesting problem; and it is so much at variance with the view generally taken that, after years of special research on the subject, I can only state it with deference to those who speak with higher authority, on a subject of physiology, than any psychologist can claim. Meanwhile, looking at the matter from a practical standpoint, it is certainly convenient to consider sleep as a state wherein the brain rests, which, indeed, is the fact, whether it is required to feed while it rests, or should, as I believe, remain in a condition as nearly as possible one of inaction.

What, then, is sleep? To this I answer, in its full development, it is a state of physiological rest. There are many grades of sleep. Experimenters have ascertained that the intensity or depth of sleep goes on increasing for about an hour after its commencement; then follows a stage of fluctuating depth, in which the sleeper may be more readily disturbed; and some time before the usual hour of awakening the return to consciousness begins, proceeding gradually by successive lightenings of the condition until at last the brain wakes spontaneously, or is easily aroused. Dreams are the results of defective or partial sleep, and their common occurrence in the lighter

varieties of the state shows that the rest taken by most persons is not either profound or continuous, even while it lasts. The purpose of sleep is probably to take the strain off the consciousness and give it, so to say, new points of departure. In the nearest approach to perfectly normal sleep the sensibilities are dulled to external impressions, cerebration is, I believe, suspended, and the mind ceases to act. During such a state it may well be that the germs of animal life lie dormant like the vital principle in the vegetable organism, or in the system of the hybernating animal. That vital changes may take place in the tissues during sleep is probable, just as chemical forces may work in the dead body; but the analogy of the seed which retains its vitality during a long period of inaction without any interchange of constituent elements with the material of the outer world, seems more pertinent to the comprehension of sleep.

It is important to recognise this point, as it has a practical bearing upon the estimate we should form of sleep, the sort of sleep with which we ought to be satisfied, the steps that should be taken to prepare for it, and the mistakes against which it is necessary to guard in attempting to procure or prolong it. If sleep is to be a state of rest it should be so conditioned by the

surroundings as to admit of perfect and undisturbed repose. There are individuals who can sleep anywhere and anyhow. Their faculties of sensation are so easily suspended, or relegated to the use of the automatic sub-consciousness,[1] that either nothing, or only impressions they happen to be expecting, in which they have a special interest, will arouse them. Soldiers often sleep during a bombardment, or on horseback. The sleep-walker will perform all the movements necessary to carry out the purposes of his "unconscious cerebration" while the consciousness sleeps. In all these cases, and many of the same class, the supreme centres of consciousness sleep while the other parts of the brain only partially slumber. The rest obtained under these circumstances is partial. When this state of things continues for any considerable length of time without doing serious injury, probably those parts of the cerebro-spinal system which are not rested during sleep obtain repose by the occasional suspension of their functions during general wakefulness. It is abundantly evidenced by experience that one part of the intellectual apparatus may be rested while others work; nevertheless for ordinary sleepers the sur-

[1] See the paper on Habit in *The Secret of a Clear Head*, pp. 16–29.

roundings must be of a nature to exact nothing from the sleeper if he is to rest. This is a great requirement, and it is of high moment to understand clearly what it means.

Some nervous-organisms have been so developed by training, habit, or circumstances, that attention has become concentrated upon a particular avenue of sense, through which the external world is brought into relation with the organism of mind. For example, either by some hereditary or acquired constitution of the system it may happen that the mind is in perpetual expectancy with regard to perceptions of sight or sound. In such cases rest may be impossible even in darkness or perfect quiet. Certain impressions are anticipated, and when they come—or sometimes, if they cease, as when the mother pauses in her lullaby—the sleeper awakes. This is a matter of habit, and it needs to be recognised in the case of disturbed sleepers of the neurotic temperament. It not uncommonly happens that the association established by habit is unsuspected by the sufferer. Perhaps it is too trivial to have been noticed, or, in certain states of mind or feeling, the organism of mind may be carried back to an old stage of development in which a now forgotten habit ruled. Before substituting artificial for real

sleep by the recourse to drugs, the cause of sleeplessness should, therefore, be sought in the breaking of recent, or the revival of a demand for old, associations. In cases of weakness or irritability it is cruel to neglect these considerations. Sleep is rest, and that presupposes the perfect withdrawal of causes of irritation, negative as well as positive.

There are many sorts and conditions of sleep, if all that goes by the name is to be included in the category. First, there is the *cerebral* sleep to which we have referred, consisting simply in a state of unconsciousness, brought about by artificial means, when it is called hypnotism; or by habit, in which case it does duty for real sleep and, as a matter of fact, is the best form of rest many brain-workers are privileged to enjoy. The man who works with his head chiefly, and takes scarcely any physical exercise, hardly creates the need or occasion for muscular sleep. The small proportion of general waste and damage to the tissues—other than those of the brain and nerve centres with their connections—by his daily life is readily compensated and repaired; and where there is little or no regular work the rhythm of periods of rest, alternating with periods of activity, can scarcely be established. In this variety of the state we are considering, the automatic system, so far as it is

related to the muscles, is not exhausted, and will often remain awake while the supreme centres of the Consciousness rest. A person so placed is exceedingly likely to dream, and the subject matter of his dreams will probably be a continuation of the work and worry of his waking life. In fact, the lesser faculties in the domain of the sub-consciousness are not wearied, and they toy with the business which is, so to say, left unfinished in the mind; and wondrously pain-giving havoc they too commonly produce. The obvious remedy for this trouble, worrying and wearing dreams of the previous day's business occurring in a person who labours chiefly with the brain, is sufficient routine or habit-work to tire the sub-consciousness, and create a need for *automatic* sleep; the second variety to which I propose to call attention.

Those who perform the bulk of their mental and physical labour by habit and routine, or who by over-striving for expertness have developed the faculty of sub-conscious control so highly as to create an imperium in imperio, as it were, are accustomed to another sort of rest, in which the instinctive and locomotive parts of the mind and nerve organism rest while the consciousness either remains active or sleeps so insufficiently as to be easily aroused. These persons are what are

called "light sleepers," and under ordinary conditions and in health may experience no more serious contingencies of this form of sleep than dreams, which are in truth half-voluntary imaginings of the dozing consciousness. They easily fall into reverie, or waking dreams, and may go about their daily duties in a state which is a prolongation of the aimless condition into which the consciousness falls when the sub-consciousness sleeps. When the automatic system is thrown into a profound state of rest, and the consciousness dreams, a sort of nightmare may be produced which has no immediate connection with the digestive organs, and often takes the shape of a dream, in which the sleeper tries to cry out or to speak, but has no voice, and suffers all sorts of inconvenience and disappointment because he cannot carry out his purposes. If the automatic sub-consciousness were not suspended he would be satisfied by the response of that faculty. Few, if any, probably, of his volitions would produce an act, because the motor system, with its nerves of action, sleeps, but the mental experience would be complete; whereas the automatic centres, being at rest, the will is *consciously* impotent; hence the feeling of distress. Except in learning to perform acts, including combined movements of the

muscular apparatus, the will operates through the automatic sub-consciousness, and if the latter be in a condition to receive the impulse, the consciousness is satisfied. It is because, in the class of cases to which I now allude, the sub-consciousness sleeps and cannot receive the impulse of the dreamer's volition, the feeling called nightmare is experienced. The nightmare of indigestion is essentially different in its nature and mode of causation. That of which I here speak is a purely mental phenomenon throughout, and accounts for a large and common class of dreams which are not generally understood. A third variety of sleep is *muscular*, and it is eminently salutary when, as fortunately often happens, it lures the cerebral centres, supreme and subordinate, to rest while it persists. This is the sleep of the man who works with his muscles more than his brain, and of the wise student, or mental labourer, who is careful to take sufficient bodily exercise. The mountaineer, the farmer, the hunting and boating man, the cricketer, and "active" folk generally, enjoy the luxury of this rest, and awake refreshed to their daily duties.

The condition essential to muscular sleep is healthy fatigue, not overstepping the limits of exercise proportioned to physical strength. Sensations of burning, coldness, numbness, and the like, are

indicative of undue or unaccustomed exertion. It is possible, by excessive exhaustion of the muscular system, to create a morbid or disorderly state which may simulate nightmare; but this form is rare, and the experience is itself of brief duration, commonly, though not invariably, confined to the moment of disturbance, or awakening, if that occurs before the bodily sense of weariness has worn off. Persons so affected will stretch a good deal when they wake as though to get the cramped or stiffened muscles out of knots. There is a fourth variety of sleep, the *visceral*, which, so far as I am aware, has not heretofore been described. It undoubtedly exists, and is, I believe, the cause of dreams which have been too hastily assigned to a mental origin. The visceral organs of the body, which in a healthy life are naturally allowed seasons of repose, may be subjected to too continuous labour or undue excitement. When this happens the organ must, in self-preservation, fall into a condition of inaction when the opportunity offers during general sleep. A close connection exists between the several organs and the brain and spinal cord through the sympathetic system. When an organ sleeps, or falls into a state of inaction from exhaustion, the circulation will be diminished in its tissues, and the nerve impression conveyed to other organs through the

adjacent centres may be irritative, in which event the sub-consciousness, or even the consciousness, will become cognisant of either the dormant or the disturbed organ and its function in sleep by a dream. It is not always active irritation of an organ that produces a dream reflexly, as is generally supposed, but a state of exhaustion and numbness, which makes it seem to be oppressed and lie as a dead weight or foreign body in the system, thus importing the function of the organ into the subject matter of the dream when the organ itself is inert. This visceral sleep may be produced by undue exercise or overloading of the organ, by some morbid process going on in it, or by habitual inaction, which renders it torpid. It is very important to recognise this last-mentioned state, because the method of relief for the trouble will obviously differ totally from that which succeeds in the opposite conditions of overwork.

All these varieties of sleep may coexist in varying degrees, or they may occur separately. The most perfect and refreshing—in a word natural—sleep is that which combines the whole series in such healthy proportions as an orderly and active life will establish, by a constitutionally equal distribution of work, looking to the comparative powers of the several parts of the system, the opportunities for rest, the food supply, and the measure of

strength each department of the mental and physical organism of the individual enjoys. This wise adaptation of work to the different energies, so that each shall lighten the task, and contribute to the efficiency, of the others, is a duty to self which every step forward in the march of intellect and the progress of civilisation seems to make it increasingly difficult to discharge.

To sum up, Sleep is a rhythmical function of life. It is performed by the nervous system either through a single centre or by the several centres connected with various parts or organs of the body, from the supreme cerebral centres which control the immediate apparatus of intentional thought to the ganglia that regulate the work of the viscera. I believe the sympathetic system plays a conspicuous part in the production of the phenomenon, and this is why the due performance of the function is so readily prevented as it is, by disorderly action in almost any part of the body, even when there is no sensation of pain or of uneasiness at the seat of the disturbance. Persons who do not sleep well and regularly are peculiarly liable to functional disorders; and, conversely, those who are subject to the anomalous maladies and symptoms too often set down to fancy, but actually existing and traceable with care to some special

ganglion of the sympathetic system (for example, uneasiness in the "pit of the stomach," or aching pain in the lower lumbar region of the spine), are disturbed or disorderly sleepers. Sleep is a nerve state, whether the part sleeping be the brain, or certain parts of that organ, the muscular system, or the viscera. The modifications which take place in the vessels supplying the organ or system that sleeps are the effects or consequences instead of the causes of its condition. An organ being at rest the supply of blood is diminished by the nerves regulating the size of its vessels, and when sleep is general and healthy the heart's action is slower, and the lungs work less rapidly. That these altered conditions are not themselves the causes of sleep must be obvious, from the fact that neither any one of the changes in the circulation which usually accompany sleep, nor all combined, will constantly produce it; while each or the whole series may be absent, when the condition of sleep is established. This not unfrequently happens in disease. The conditions set up by experimenters who believe they have caused sleep by compressing the veins, and the like, are essentially different from sleep, and so are the states of stupor induced by ingenious methods of tiring out or paralysing, as though by fascination, certain

of the senses, in which cases, however, the so-called "sleep" may extend to neighbouring centres of the nervous system, and in the issue bring about the genuine sleep: of this more presently. Neither is the narcotism produced by drugs, or the condition of carbonisation caused by suspending the supply of oxygen by direct action on the oxygen carriers—the red corpuscles of the blood—as in the administration of chloroform and certain anæsthetics used for medical purposes, or by chloral and other perilous and abused "sleep-producers," sleep.

Natural sleep is a simple vital process. Nature indicates the proper time and the due length of sleep by the alteration she effects in the external light. The relative lengths of the night and day, the appointed periods of sleep and waking life are beautifully adapted to the conditions of the climate, the temperature, and the general surroundings. To such perfection is this adaptation carried that the very transit from day to night is adapted to the special requirements of each zone. Where, for example, there would be danger to health by exposure to the exhalations from the heated earth, darkness covers the scene suddenly; when man may with impunity loiter on his way to rest, the light wanes slowly. Civilisation has borne us out

of sight of these natural landmarks, and we steer by a needle and chart of our own fashioning. The philosophy of health preservation consists in an intelligent study of the natural conditions of repose, and obedience to the laws therein laid down for our guidance, so far as the natural can be harmonised with the artificial—a sad reversal of the processes of Nature, but the best policy the strained circumstances of modern life will admit. The object weary man pursues is rest. Sleep is rest.

GOING TO SLEEP.

THE act of going to sleep is a distinctly vital and functional process. The phrase "falling asleep" is founded upon an erroneous conception, and misleads. It involves and expresses the idea that sleep is a simply negative state—an interval of inaction between two periods distinguished by active energy—whereas there may be even violent action in sleep, as in some cases of sleep-walking, and the most complete suspension of functions compatible with life is often found in certain forms of insanity and the states known as hysteria and catalepsy, without sleep. It is important to

recognise that this rest, which comes to certain persons at will, and to most as a matter of habit, is something more than the mere negation of energy, because when sleep does not occur naturally it is of high moment to avoid mistakes in striving to induce it.

We cannot doubt that it is occasionally necessary to throw the body, or certain parts of the body, into a state of semi-paralytic stupor by operating on a few of the nerve centres with drugs, which are poisons, but in small doses produce their characteristic effects so gently and in such constant proportion to the quantity administered, that it seems safe to play with them. The need of quietness of some sort may be great enough to cover the risk, or the latter may appear so insignificant as to justify the use of a so-called "*sleep*-producing drug" with or without urgent occasion. It should, however, be remembered that these remedies are capable of destroying life, and it is only by the exercise of their poisonous properties in a low degree they produce the results for which they are given. The action is destructive to life, and the only reason they do not kill is that we do not take enough of them. The state they produce is not sleep, but a condition of narcotism that counterfeits sleep. When a man says, "I want a

quiet night; I will take a sleeping draught," he speaks in parables. To express the fact plainly, he should say, "I want a quiet night; I cannot obtain it by going to sleep, or I am afraid to trust to the chances of natural rest, so I will poison myself a little, just enough to make me unconscious, or slightly paralyse my nerve centres, not enough to kill." If this fact could be kept clearly before the mind, the reckless use of drugs which produce a state that mocks sleep would be limited.

The obvious answer to this argument is that let the state induced by drugs be what it may, call it what we will, it secures "rest" from which the subject of its influence awakes refreshed, and the all-important consideration is one of results. That may be perfectly true as a general, though most unsatisfactory and scarcely intelligent, record of experiences; but science and, I venture to think, common sense also asks for a fuller and better account of the phenomenon, and at least some explanation of the way it is produced. We may be fairly called upon to comply with this demand for information, and if we fail, the practice of taking and giving what are called sleep-producers must stand confessed as blind and empirical. When drugs of the class we are now considering do not indirectly bring about sleep by mental influ-

ences, the condition they set up is, as I have said, one of mild and slight poisoning. In the recovery from this drug-induced state the subject sometimes passes into a state of real sleep. It is generally possible to determine the period when the change of condition takes place. The person under the influence of the drug begins to rouse from the lethargic state, but, feeling weary and often distressed, changes his position slightly and goes to *sleep*. If natural rest does not thus quickly supervene on the drug-state, no benefit is derived, the night is disturbed, and sensations due to the poison are added to wakefulness. When a true sleep-state ensues the effects of the drug often pass off before consciousness is regained, and they are not recognised; but the influence they exert on the nervous system is not the less disastrous because unperceived. Sometimes, as I have hinted, the mental influence of taking the drug anticipates its physical effect, and the person to whom it is administered goes to sleep *naturally* before the poison begins to act. The narcotic action is then worse than useless, though its effects specific, and collateral, are masked by sleep. It is generally as aids, or inducements to "go to sleep," soporifics act. No known medicine is capable of producing natural sleep, and

there is no true sleep that is not natural, although other states may more or less closely resemble it.

To go to sleep is to establish a condition in which the several organs of the body are thrown into a state of inaction differing essentially from one of paralysis. The tension is taken off, but there is no diminution of strength or physical inability to use it. The perfectly healthy sleeper recovers his powers unimpaired when he awakes, and there is no headache or "heaviness"—the effects of a slight paralytic condition—to remind him that the state of unconsciousness from which he has recovered was non-natural. It is this taking off the tension that constitutes "going to sleep." It is not itself *sleep*, but it is the act of induction to that state. Because this is not clearly understood persons find it difficult to sleep even when the body is in need of rest. There ought to be no need to think about it; the function should be performed as naturally as that of eating when appetite supplicates the will for food; but just as it is hard to eat while we are talking, it is generally embarrassing and often impossible to go to sleep because we are thinking. The cessation of intentional thought will not of itself produce sleep, just as no amount of bodily weariness, or the most perfect quiescence, can establish the state

in the absence of a tendency to sleep, but in a large proportion of cases persistent thought is the very cause of sleeplessness.

Habit greatly helps the performance of the initial act, and the cultivation of a habit of going to sleep in a particular way, at a particular time, will do more to procure regular and healthy sleep than any other artifice. The formation of the habit is, in fact, the creation or development of a special centre, or combination, in the nervous system which will henceforward produce sleep as a natural rhythmical process. If this were more generally recognised, persons who suffer from sleeplessness of the sort which consists in being simply "unable to go to sleep," would set themselves resolutely to form such a habit. It is necessary that the training should be specific, and include attention to details. It is not very important *what* a person does with the intention of going to sleep; but he should do precisely the same thing, in the same way, at the same time, and under as nearly as possible the same conditions, night after night for a considerable period, say three or four weeks at least. The result will amply reward the effort.

It is desirable to make the process of going to sleep, intentionally, as simple as possible; for ex-

ample, laying the head in a particular position, and thinking of a dreamy or monotonous subject, something that will glide easily into a dream.[1] No thought should be bestowed on the surroundings. Those who make these part of the condition, may acquire a habit of going to sleep only in a particular bed, with a certain sort of light, or sound, or stillness, or even of temperature or atmosphere, with its special currents of air; but such persons become the creatures of circumstances, and if these are not propitious they cannot sleep. The wooer of sleep should make his ceremony of induction as simple as possible, so that he may be able to perform it anywhere. Another precaution is of importance. Care must be taken not to awaken a feeling of disappointment, and thus create a *finale* of tossing about and "giving up the attempt," which shall become part of the habit formed. If this mistake should be made, and the proceeding be repeated many times, the grotesque result will be a habit, not of going to sleep, but of trying to go to sleep, and giving up the pursuit in disappointment! It is not sufficiently understood that habits of thought and feeling are linked with those of position and bodily action. This is how we are able to recall

[1] See the paper on Sleeplessness from Thought in *Common Mind Troubles*. Second Edition. Pp. 37—47.

particular thoughts by placing ourselves once more in the position in which we were when thinking them.

If sleep does not come rapidly in the way it is looked for, it is well to assume some other position before a sense of weariness is experienced; then on repeating the first experiment another night sleep may be obtained. An effort easily made, and concluded instantly without stopping to think about and regret its failure, will often be ultimately and *permanently* successful in establishing a habit of orderly sleep, even after a series of disappointments extending over many nights or weeks. Sometimes the tension of wakefulness may be taken off the supreme mind centres and indirectly off the subordinate centres of intelligence, and the muscular and organic systems, by simply allowing thought to fall into a jog-trot—riding, as it were, with a loose rein. This method is generally of use only to persons who, during their waking hours, think vigorously. With such minds and temperaments, the mental act of dropping the rein may of itself be sufficient to set the sleep centres in action. Less orderly and precise thinkers—as distinguished from persons who allow Thought to rule *them*—do not commonly derive any great help from this expedient. Another method more useful to the class last mentioned, and one which is often of

service to the less robust of intellect, is to beguile some special-sense organ to sleep by a low-toned and oscillating rather than monotonous impression. It is little use staring fixedly at a bright object—even the moon or the white mount of a picture on the wall—listening to the tick of a clock, or the familiar cadence of a tune, unless the attention rapidly becomes effortless. The " sleep " induced by strained attention of any kind is scarcely natural. It is more like hypnotism than the *rest* of nature, and is apt to produce mind-weakness. The best mode of seeking sleep through the senses is to pleasantly bewilder without irritating them. The method to which we have just adverted, acts—when it succeeds in establishing a state like sleep—by exhausting the brain and nerve centres through weariness. When any one centre goes to sleep others are likely to follow suit, just as a convulsive movement set up in one centre, perhaps reflexly, will extend to other centres and combinations. This associative faculty of the nerve organism, which attains its highest and most widespread development through the connections of the sympathetic system of nerves, is employed by nature in the establishing of general sleep, and may be utilised for the same purpose by art. Much wisdom is, however, required in dealing with the

need, and determining the best mode of procedure, in particular cases, and such wisdom only intelligent experience can supply.

As I have said, the whole business should be unnecessary; sleep ought to be induced by instinct acting in response to the sense of fatigue, or in obedience to the impulse of habit; but when the orderly performance of a natural process has been interrupted, it is difficult to restore the rhythmical sequence of cause and effect. What may be termed oscillating, pendulum-like, or rotatory impressions—for example, the mental picture of a field of corn waving in the wind, the conception of a moving object or of a ding-dong or tinkling sound, or the thought-image of a revolving wheel or windmill—spread their influence over the mind and nervous system by successive extensions, as the rising tide makes good its advance on the shore. The progressive effect is so gradual as neither to excite attention nor provoke resistance.

When, in unhealthy states of the nervous system or disturbed conditions of the consciousness, the act of going to sleep is imperfectly performed under the influence of irregular exhaustion—some parts of the system being more impatient for repose than others, the body dragging the brain unwillingly to sleep—the process is apt to be interrupted with a

start. This experience is familiar, particularly to the weakly, the worried, and the overworked.

The sufferings and discomforts of those who find the act of going to sleep difficult are many and various. The following are among the most ordinary: The moment the head is laid on the pillow and the mind settles for sleep, up rise phantom thoughts, imaginings, and reflections, which throw the consciousness into a state of turmoil and destroy the chance of rest. The greater the effort to compose the mind the more confused does it become. The exclusion of external impressions only intensifies the flurry and worry within. There is nothing surprising in this when we remember how many lives are, in truth, a prolonged struggle against the inner experience of self. If it were not for the distractions of duty, social influences, and the discipline of circumstances, no inconsiderable proportion of the more intelligent and self-conscious of mankind would find existence intolerable, or become insane. It is, therefore, not in the least degree astonishing that, when a mind disorderly or distressed is shut in, so to say, upon itself, there should ensue such disquietude that to sleep becomes impracticable. A like condition is established when a weak or highly-sensitive mind is excited by any occurrence or narration shortly

before retiring to rest. In the still silence, with nothing to divert the attention, the irritant or exciting topic reverts, and either prevents sleep or supplies the motive and material of a dream.

It is easier to avert than to remedy this evil; indeed, the cure of the habit must always be preventive. Few habits can be eradicated by direct measures of extinction, for the practical reason that they are the expressions or embodiments of formulæ of energy dependent on automatic combinations, which can only be broken up by rearranging the elements whereof they are composed in some new form, to be created reflexly—mind operating upon matter—by doing a new thing repeatedly until it becomes habitual and supersedes the old propensity. In short, to go to sleep quickly and easily is the only way of forming the habit of thus going to sleep. This is what those who employ "narcotics" or "sedatives" as remedies for habitual sleeplessness claim to accomplish by their method of treatment: but these drugs act by paralysing the nerve centres; so that no new combination to constitute the physical basis of a better habit can be formed! It is only when the natural habit has been temporarily interrupted by acute disease or by some accidental circumstance—such as watching by a sick

bed—they succeed. The drug-produced stupor may in that case break or suspend the morbid obstacle to rhythmical sleep, and the natural automatic habit may reassert itself; but this is a very different thing from curing sleeplessness by soporifics.

A new habit and combination can only be created by a process of re-education, and the most likely way to succeed is to treat the sleepless person as a child, and "put him to sleep"—as an infant is soothed to slumber—several nights in succession, gradually withdrawing the educationary influence as the normal habit is re-formed. An intelligent sufferer can do this for himself by some simple device such as I have previously indicated.[1] When, as we are now supposing, confusion or distress of thought is the cause of sleeplessness, it will be necessary to devise some little drama which the fancy may perform for its own amusement, and it is essential that this should be at once engrossing, not too exciting, and above all things pure. It must also be what I have called oscillatory in its character. To a lover of music, a mental rehearsal of some simple scene from an opera would probably offer the most facile

[1] See also remarks on this subject in the paper on "Sleeplessness from Thought," *Common Mind-Troubles.*

means of forming a habit of sleep. The same scene must be imagined, the same words mentally repeated, and the cadence of thought must be the same, night after night until the habit is formed. After a little practice sleep will come before the performance is well commenced.

Another common experience in the attempt of the sleepless to sleep, is physical. Instead of going to sleep, they become a prey to distressing throbbings and palpitations, jumpings and twitchings, with pains, burnings, noises in the head, and strange sensations, which keep time with the heart and the pulse, or the rise and fall of the chest in breathing. Doubtless, these distresses are caused by the exclusion of external impressions, and the attention being thrown in upon self; but much is due to the fact, which I have already incidentally noticed, namely, that general sleep is mainly brought about through the influence of the sympathetic system. When the mind-organ wills sleep, and strives to establish that state, the part of the nervous system we call the "sympathetic"—which serves to combine and correlate the organs and their functions—should compose the several systems of the organism, and render them obedient to the supreme influence of the cerebral centres, or to any impulse propagated through one of

the subordinate centres, so that sleep may be induced.

It sometimes, however, happens that certain organs, being preternaturally irritable, resent the impulse transmitted through their nerve-centres, and are excited to greater activity. Instead of slowing its rhythmical contractions, the heart may beat with greater rapidity and irregularity. In place of falling into a state of moderate tonicity, establishing a steady minimum calibre and an equable blood supply, and pressure, the vessels within the cranium are irritated and unequally contracted or dilated, so that the lowermost parts of the brain or thought-organ, as the head lies on its pillow, receive and retain the largest share of the jerkily-propelled and sluggishly-flowing fluid; while the special sense-organs and their centres, far from presenting a diminished sensibility, are acutely alive to every impression, and sight and sound-sensations come to be morbid and painful. All this insubordination is the consequence of a want of tone in the sympathetic system, and the subjective symptoms that accrue to the would-be sleeper aggravate his distress instead of inducing repose. In such a condition of matters, medical treatment, aimed to invigorate and strengthen the nervous system as a whole, and

the sympathetic apparatus in particular, is indispensable to the establishing of a natural habit of sleep; and I will say no more on this part of the subject, as it lies outside the sphere of self-help, to aid which my present purpose is limited. It would be easy to name other troubles incident to the act of going to sleep, but these will suffice to illustrate the principle and method of their causation.

The consideration I would press on the reader is, that the way to go to sleep will be to establish a condition favouring the routine performance of this natural function. The less of effort made, and the more simple the procedure adopted, to create and develop an orderly habit of sleeping, the better. It is vain to hope that difficulties will be surmounted by a prolonged or determined endeavour. It is a serious and frequent blunder to court sleep too ardently, or to lie tossing and fretting because sleep seems unattainable. Many persons, by dint of clumsy efforts to go to sleep, form a habit of worrying themselves into wakefulness the moment they begin to seek rest. If sleep will not be wooed in one way it is better to give up the pursuit and try another. Sometimes sleep can be won by feigning not to desire it. This plan works by drawing the attention away from the

state of nervous excitement into which the mind and sense-centres have been thrown by fruitless effort. If the sufferer has the courage to rise and read awhile, sleep may steal over him unawares.

Yawning is a spasmodic effort to breathe deeply, and may be assumed to indicate a need of oxygen in the blood. Either the muscles that move the chest in breathing have fallen into a sluggish state too quickly, or the heart's action has been too rapidly slowed. The rest of the body, and particularly the nerve centres, are not perhaps ready to go to sleep, but cannot remain awake on the short supply of oxygen available, so the demand has to be met by a series of spasmodic inspirations, deep and prolonged.[1] The act of yawning shows that automatic sleep is commencing while cerebral or visceral sleep is delayed. Heavy eyelids and eyes dimmed with tears point to dozing nerve-centres, and dilated blood-vessels with lax walls acted upon by mechanical pressure, which also ejects the contents

[1] Yawning is a most interesting phenomenon, and requires to be investigated. It occurs in faintness, from failure of the heart's action or loss of blood, because the supply of oxygen is deficient; but there is a variety of yawning that seems to be more directly connected with the stomach and the diaphragm, and often precedes sickness.

of the lachrymal glands and ducts, as in the flow of tears caused by yawning or staring fixedly at any object until weariness is induced.

When, with all these indications of sleepiness, sleep does not occur, there is some cerebral or visceral obstacle to the natural establishment of the sleep-state which needs to be sought out and removed. Of the mind troubles and disturbances which prevent sleep little remains to be said, except that the recurrence of particularly troublesome trains of thought at the hour of sleep should be treated as a morbid habit, and a cure compassed by establishing a new habit of orderly and sleepy thought to replace it. It is not always possible to remedy the evils of this obstructive state, but much may be done to reduce and in the end relieve them; and nothing will so much conduce to the discovery of a method of opening the ivory gate as a little careful attention in the hours of waking thought to the facts and principles I have tried to explain.

SLEEPING.

WHAT has been said as to the nature and probable causes of sleep will have prepared the way for a few practical observations on the personal subject of

sleeping. Recalling our conclusion that sleep is a natural function, and that it is a positive state rather than the negation of other states—just as tension is an active condition of quiescence, while relaxation is passive—it will be easy to perceive that the act or function of sleeping must have characteristics depending on the time and manner in which it is performed, and the special qualities and tone of the organism performing it. Some individuals are constitutionally good or bad sleepers. For example, a strong and not too sensitive nervous system facilitates the function of sleeping, not merely because its relations with the external world through the sense-organs are less direct, and, therefore, more readily suspended than in the case of an acutely sensitive person, but the organs are in closer sympathetic connection among themselves, and when one is wearied, the rest are easily thrown into the state of sleep.

If a person of robust constitution in rude health be fatigued, either by an effort of thought, automatic exertion of mind or body, or muscular exercise, or if he overload his stomach with food, he sleeps; the most tired organ or system first falling into a state of repose, and, by its naturally close sympathetic connections with the other component organs and systems of the being, carrying them with it. What we call a

sensitive person is not so constituted. His compound nature is, so to say, less closely knit. When one organ needs rest the others are not so easily lured to repose. It is the practice to think and speak as though the sympathetic relations between the several parts of the body and mind of a highly sensitive person were more intimate than those which obtain in robust and rude natures. I believe this is a mistake, and the error comes out strongly in respect to the matter of sleeping. There is the clearest evidence of want of natural sympathy when the weariness and sleepiness of one part of the apparatus of life does not communicate itself to the others. The truth is that those natures we call "sensitive" are morbidly excitable, because there is a want of equilibrium between their several component parts. Some one element of the physico-mental constitution is developed out of proportion to the rest and establishes closer relations with the mind, through the sense-organs, than those which connect it with other parts of the organism.

Health and integrity of constitution imply equality of growth; and although it is possible, and should be the aim of training, to secure this equality in a high state of intellectual and bodily perfection, it is more commonly found in those who live rough lives, passing a great deal of their time

in the open air and enjoying robust health, than in the delicate and the sensitive. The mobility of temperament indicated by quickly responsive relations between the external or relative, and the internal or organic, parts of the being—if I may employ arbitrary terms thus loosely to express a particular phase of meaning—is not favourable to sleeping. Blushing at a thought or feeling, blanching with transient fear or passion, are tokens of the irritability of the sort which used to be defined "as a disposition to act without the power to act with." The quickness, delicacy, and acuteness of this temperament are not so much proofs of high growth as of irregular and unequal development. True excellence consists in the perfection of the being as a whole with a proportionate development of the apparatus of internal relations, the connecting links of the organism, the sympathetic system of nerves.[1] It is scarcely, therefore, surprising that the sensitive and emotional are not, as a rule, good

[1] Students of physiology may think I am exaggerating the importance of the Sympathetic system, and ascribing new functions to what is commonly regarded chiefly as the nervous apparatus of visceral or organic life; but the position I assume I am prepared to maintain. It is significant that the sign of true sleep is contraction of the pupils. This phenomenon is probably produced by suspension of the sympathetic-nerve action which holds

that state may in its integrity follow upon the relief obtained; but if other causes of disquietude exist, the sleep will be incomplete, or the relief afforded by the remedy may be temporary, and the trouble, the worry, or the pain returning during sleep, the state will be partial and the rest incomplete. When this happens the sub-consciousness is apt to incorporate the subject matter of the experience in a dream. Thus the sufferer from toothache, who has fallen asleep in an interval of relief from pain, may dream that he is having his tooth extracted, because the pain has returned.

The conditions under which sleeping is easy and likely to be natural must now occupy our attention. I have briefly alluded to the importance of putting an end to hindrances and removing obstacles to sleep, instancing mental anxiety, nervous worry and pain, as examples of the class of evils which prevent natural rest, and showing how they will mar sleep if not allayed before it commences, or if recurring while it lasts. We may go to sleep and *forget* our troubles, but they will not thereupon cease to wear, injure, and give us pain. It remains to consider how sleeping may be facilitated by (1) time, (2) the physical state, (3) the surroundings, and (4) the constitution and training of mind.

First, as regards time. All natural functions, and

pre-eminently those which relate to states forming links in the chain of existence, as does sleep, should be performed in regular periods. Life is at its best when it pulsates with a perfect rhythm. So much labour, so much leisure, so much sleep, constitutes a good formula, and by thus making the progress of life automatic and habitual[1] the consciousness is left free to devote itself to those higher objects of thought which must suffer when the attention is occupied with "taking care" for the life that now is, instead of concentrating expectancy on that which lies around us and is to come. The only disadvantage of this method is, that by making a regular sequence and proportion of sleep a habit of life, we cause the health to grow dependent on this regularity, and any serious interruption of the routine will produce disturbance and weakness. On the other hand, there is this great advantage of the formal habit of life, that it protects both body and mind from injury by exertion so long as the orderly rhythm is maintained.

The man who lives methodically can bear trouble better, out-live more worry, endure greater pain, and perform a larger and better task of work than he who, not having ordered his life by rule, is compelled to expend no inconsiderable share of

[1] See the paper on Habit, above cited.

his energy in resisting the wear, and compensating the waste of mental and physical strength which a disorderly and impulsive life entails. To sleep well we should sleep regularly at fixed times and for predetermined periods. Sleeping well ought, in truth, to be a strong habit; and, if it be so, that will go far to ensure its occurrence at the proper moment, and to give it a natural and complete character while it lasts. The practice of snatching brief spells of sleep at irregular opportunities is fatal to an orderly habit, and that of "dozing" is still more destructive of sleep. It is, in many instances, the origin of a morbid disposition to transient and imperfect sleep which does serious harm. Dozing is not sleeping.

There should be no reserve about sleep. Children sent to bed with lessons on their minds are liable to attacks of masked or unformulated epilepsy. Adults going to sleep full of the business of the coming day cannot obtain the benefit of rest. It is a common thing to hear persons boast of being able to wake at any time they please. Those who do this lose consciousness and may enjoy muscular and visceral sleep, but the sub-consciousness remains watching for the hour to wake the body. It is charged with this duty and by practice learns to obey. Forming a habit of waking every morning at

a particular hour is a wholly different matter. That is, in fact, a habit of resting a certain length of time, and is perfectly natural and wise. There is another practice equally destructive of sleep—namely, keeping one, or more, of the sense-organs on the alert for particular impressions. All habits of this class are inimical to true physiological sleep.

The fitting time to sleep is that indicated by Nature, and the use of artificial light for the purpose of lengthening our days does not probably increase the sum total of work done, although the exigencies of civilised life have created a demand which ingenuity must in some way supply. It is unfortunate that this cannot be accomplished without marring the rhythm of a function on which the health and happiness of life so directly depend as the orderly sequence of waking and sleeping. The way of adjusting this derangement of the life is to adopt the practice of early rising. By making it a rule to rise promptly and punctually, at a suitable hour, when the day is young, we secure great benefits. The habit brings repose to a summary termination, and prevents dozing after awaking, which is prejudicial to health. It, moreover, prepares the way for a method of work or exercise which will leave the body and mind both weary together when the day ends. Again, sleep, properly

so called, is a function which can be performed more readily and completely in the first hours of darkness than afterwards. This is difficult to explain, but it is beyond question. Most persons feel an inclination to sleep soon after the sun goes down. The real nature of this tendency is not well recognised. It is attributed to the effects of digestion, or any one of several causes except the right one. If the digestive process were the cause of the inclination to which I refer, the like disposition would be felt after breakfast and luncheon, whereas scarcely any one complains of sleepiness following upon the first meal of the day, and only those who have formed a habit of dozing sleep after the mid-day repast. The Sunday afternoon nap is accounted for by habit, not food, and the slumber of the lounger at his club falls into the same category. The theory of sleep being caused by feeding is not well founded, though it is doubtless probable that the relief of hunger, or the satisfaction of appetite, may tranquillise the system and favour sleep, and many of the component parts of our ordinary meals have a tendency to produce *stupor*. The fact that there is an untoward inclination to sleep when the sun goes down is a fruit of the ancestral habit which Nature herself created and which swayed the course of life through countless

generations. It is as natural as that which sends the birds to their nests, or calls the night-prowling beast of prey from his lair. There is practical purpose as well as interest in these speculations, because if they are pursued, as I think they must be, the effect will be to strengthen the conviction that early hours are, both for sleeping and waking, the best.

2. The physical state of the organism seeking rest must necessarily play an important part in the determination of its power of sleeping. A condition of excitement is obviously unfavourable to sleep. And as a quick, bounding pulse, marking the rapid flow of blood through the vessels, is a concomitant of excitement, while a slower and less jerky pulse accompanies the calm condition that predisposes to sleep, it is easy to understand how the reduction of blood pressure which accompanies sleep has been supposed to produce the state it goes with. When two phenomena are found closely associated, it is often difficult to decide which is the cause and which the effect. In this instance the slowing of the pulse, generally noticed when sleep occurs (the number of beats per minute falling ten or more when the subject sleeps, doubtless in part owing to change of position), is the *effect*. It is, however, of high moment, when intent on sleeping, to take every precaution to reduce the state as nearly as may

be to one of quiescence. We have already seen how the exclusion of sight and sound impressions conduces to sleep. The avenues of general sensation need to be protected in the same way, by removing sources of irritation. But of this more presently. We must first notice the essentials of the physical state.

A condition of weariness, not amounting to serious exhaustion, but producing a feeling of fatigue, is favourable to sleep. The exhaustion that springs from want of food does not tend to natural sleep: on the contrary, it will rather prevent it, because the need of the system for food excites a craving that is distracting, and, in extreme cases, occasions pain. The like is true of any state of the body or mind antagonistic to rest, and I have pointed out the danger of going to sleep until sensations indicative of the unfitness of certain organs for sleep have been relieved. It is therefore difficult, and, so far as comfort and the interests of a sound habit of sleep are concerned, injurious, to attempt sleeping when hungry, thirsty, oppressed with the troubles of bad digestion, suffering from repletion, or, in short, in any way disturbed. If sleep should occur under such conditions of the body, it will be partial and bring little repose. Those who find sleeping a difficult function ought to be especially careful to prepare for

rest by measures calculated to place the several organs of the body in a condition to sleep before endeavouring to induce that state. There is nothing so destructive of sleep as a succession of futile attempts to slumber. Failure often depends upon removable obstacles to sleep; and neglect of these, or the mistaken notion that sleep will triumph over all difficulties if it be only perseveringly sought, are the causes of unnatural, and even morbid, habits of wakefulness.

The presence of undigested food in the stomach is a common cause of sleeplessness. There is no greater error than to suppose that general, and really refreshing, sleep, can be obtained while the digestive organs are busy with food. There may be loss of consciousness, when the stomach is full, but not true sleep. Flatulence, eructations, water-brash, and headaches may occur during the sleep of unconsciousness, and not only produce dreams, but destroy, or seriously impair, the restorative value of repose. The overloading or distension of any viscus is almost certain to prevent rest extending to that organ, and by so much is the value of sleep reduced. Added to which negative evil, is the positive harm done by the irritation an unresting and distressed organ must set up. Cleanliness is of primary importance, except perhaps to those who labour with

their muscles so vigorously, that the skin acts freely during a large portion of every twenty-four hours. To those who work with their brains, or who scarcely work at all, the condition of the skin is of great moment. In natural sleep the surface is, or or should be, bathed with insensible perspiration, the network of vessels in the skin being relaxed and the glands acting freely.[1] This is impossible if the surface is not thoroughly cleansed. Mere dabbling in water will not suffice. The skin must be thoroughly washed with soap, and the products of exudation, with the constantly scaling remains of the worn scarf skin, removed. Men often think they have done wonders with a "tub" or a "plunge;" but as a matter of fact nothing short of scrubbing the skin thoroughly from head to foot night and morning can ensure cleanliness. Washing at night is the more important because the body is thereupon

[1] The tendency to perspire during sleep is, perhaps, not due solely to physical causes at work in the organism; the chemistry of life has probably a share in the phenomenon. Oxidation is the source of animal heat. Carbon, nitrogen, and hydrogen are combined with the oxygen taken in from the atmosphere by the lungs. The union of oxygen with hydrogen produces water, and heat is given off. Heat and work are correlated; but even when the body is quiescent, the oxidation of the hydrogen proceeds, and water is thrown off by the skin in the form of insensible perspiration, the superfluous heat passing away with it by evaporation.

laid to rest, whereas in the day it can work off its own impurities by wear and friction.

The temperature of the body is another matter that requires attention. It is not well to retire to rest overheated, particularly when the highest health temperature—*i.e.*, 98·6 Fahr.—is reached, at the surface, either in the head or any region of a body, except perhaps the extremities, which so far as heat is concerned may be left to the chances of diminished blood supply, unless actually painful. The fact that the heart's action becomes less frequent and quieter when sleep begins than during wakefulness, promises relief from heat by rest, but the same physiological circumstance makes it in the highest degree injudicious to go to bed cold. There is little prospect of sleeping well or habitually, that is *generally*—the whole body participating in the repose—unless an equable blood pressure is established; and with a slowing heart and relaxed blood-vessels, the equilibrium of health is not readily secured to those who sleep badly, because the temperature of the body is apt to be unequal, some parts being too cold, others too hot. A bath about blood heat, (say 98 deg. Fah.), will often be advantageous; but the whole body must be immersed, or if that be inconvenient, it is better to wash all over with flannel and soap,

using warm water, and rubbing the skin briskly with a rough towel.

The recourse to artifices, such as "drawing the blood from the head," by placing the feet in hot water, except for special cases of headache, or toothache, or influenza, is worse than idle, and it is necessary to warn those who desire healthy sleep, against the notion of using the lower extremities as points of derivation, to which the blood is to be "drawn," as the phrase goes, so as to leave the brain half-bloodless, and *therefore* in a condition to sleep! We have already concluded that cerebral anæmia has nothing to do with sleep, except as a common effect of inaction. Some persons sleep best when the vessels of the head are almost distended, others when they are contracted. It is impossible to feel sure which of the two opposite conditions will suit any particular person on a special occasion, and the safest and only rational plan of treatment is to leave the distribution of blood to Nature, while adopting measures to promote equal warmth, and a cleanly and relaxed condition of the skin over the entire surface. There are vigorous constitutions, or strongly acting skins, which are the better for bathing in cold water before retiring to sleep; but in our modern mode of life, the number of such per-

sons cannot be great, and it would be difficult to imagine any worse general advice than to immerse the feet, or the surface of the body, in cold water, or to subject them to cold affusion in the hope of setting up a reaction before going to sleep. The principle upon which we act for ourselves and others—especially children—should be to make sure that the surface of the body is warm and relaxed in all its parts, before closing the eyes for sleep. As I have more than once observed, these matters ought not to require attention, but when sleeping is a matter of concern, they generally do.

Position affects sleep. A constrained or uncomfortable posture will often prevent repose. Lying flat on the back with the limbs relaxed, would seem to secure the greatest amount of rest for the muscular system. This is the position assumed in the most exhausting diseases, and it is generally hailed as a token of revival when a patient voluntarily turns on the side ; but there are several disadvantages in the supine posture which impair or embarrass sleep. Thus, in weakly states of the heart and blood-vessels, and in certain morbid conditions of the brain, the blood seems to gravitate to the back of the head, and to produce troublesome dreams. In persons who habitually, in their gait or work, stoop, there is probably some distress consequent on straighten-

ing the spine. Those who have contracted chests, especially persons who have had pleurisy and retain adhesions of the lungs, do not sleep well on the back. Nearly all who are inclined to snore do so when in that position, because the soft palate and uvula hang on the tongue, and that organ falls back so as to partially close the top of the windpipe. It is better therefore to lie on the side, and in the absence of special chest disease—rendering it desirable, to lie on the weak side, so as to leave the healthy lung free to expand—it is well to choose the right side, because when the body is thus placed the food gravitates more easily out of the stomach into the intestines, and the weight of the liver does not compress the upper portion of the intestines. A glance at any plate of the visceral anatomy will show how this must be. Many persons are deaf in one ear, and prefer to lie on a particular side, but if possible the right side should be chosen, and the body rolled a little forward, so that any saliva which may be secreted shall run easily out of the mouth, if not unconsciously swallowed. Again, sleeping with the arms thrown over the head is to be deprecated; but this position is often assumed during sleep, because the circulation is then free in the extremities and the head and neck; and the muscles of the chest are drawn up and fixed by the

shoulders, and thus the expansion of the thorax is easy. The chief objections to this position are that it creates a tendency to cramp and cold in the arms, and sometimes seems to cause headache during sleep, and dreams. These small matters often make or mar comfort in sleeping.

3. We pass next to consider the surroundings, which greatly influence the act or function of sleeping. Some persons can sleep anywhere, and, as they say, "anyhow," which commonly means that they have consciously, or without being aware of the fact, constructed for themselves a certain habit of sleeping whereby they are independent of circumstances. This is a prudent thing to do; I have recommended the course described, but the device relates more closely to going to sleep than sleeping. A man may fall asleep from habit, but the good he gets from sleep will, in large measure, depend on the relations which subsist between the sleeper and his surroundings. We have sometimes seen a spider dozing in the centre of his web with every disturbance propagated along its delicate fibres to his slumbering body. The rest obtained under conditions in any sense resembling these cannot be great. The sailor may sleep in his hammock with the ship labouring beneath him and the storm raging around, insensible to everything except the

boatswain's call; but rest under such circumstances is possible only because the muscular system of the weary man urgently requires repose, and the component parts and organs of his body being held together by a full-toned sympathetic system they are carried to sleep in its train. In practice, the sleep obtained in the midst of any set of surroundings will depend on the degree in which these are favourable to sleep of the kind most needed. Those who work with their brains require mental quiet; those who read or write much, or in whom the organs of speech are greatly taxed during the life of consciousness, want physical silence and the absence of unaccustomed sources of impression; the worker with his muscles is chiefly in need of relaxation and muscular repose. Persons with highly sensitive skins cannot, as we have elsewhere noted, sleep if any external irritant distresses or disturbs them. Even if they succeed in going to sleep from sheer weariness in the midst of adverse surroundings, unpleasant impressions are readily produced, and the sleep obtained is broken and does little to refresh or restore. Too much or too little light, a stuffy atmosphere, unpleasant smells, noise or unaccustomed silence, vibration or the absence of a particular motion—as in the case of persons who have come on shore after a long voyage—may

prevent sleep. Habit has, of course, much to do with these peculiarities, but the fact that particular systems need sleep and cannot readily obtain it is the deeper cause of such experiences. Sleep is a state, and perhaps in no two individuals is it established in precisely the same way, or under exactly corresponding conditions.

The proportion of rest required by the several parts of the physico-mental constitution, depends on personal development ; and natural sleep is, so to say, compounded to satisfy various needs. Nature determines the formula; natural habit registers it, and so deals with the surroundings as to carry it out. In health the several faculties of sensation and relation are concerted, like the notes in a musical chord, to produce an independent state, and the surroundings are of only secondary importance; but when sleep has become difficult, it is necessary to strengthen or restore the natural habit by adapting the surroundings to the particular disposition. It is impossible to lay down any definite rule. Probably no two idiosyncrasies will make the same requirements. Persons with whom the imaginative faculties are peculiarly active do not generally sleep well in the dark or in absolute silence, unless the sense organs are preternaturally irritable, and therefore require special rest. Whether

auditory or visual surroundings will most affect the mind during sleep may be guessed from indications that sight or sound respectively are habitually employed in mental perception or memory. The perceptive habit is commonly of greatest importance in going to sleep, the habit of memory in sleeping. Thus a person who commonly writes or reads from *mental sound* will be likely to experience unusual difficulty in sleeping in noises that tend to disturb, although monotonous sounds may conduce to sleep ; whereas when once asleep, objects moving around his bed or changes in the light may be more disturbing than sounds, because memory, which is generally full of activity in dreams, is operating in the mind through the medium of *mental sight.* The converse of these conditions of sensibility will obtain in other instances, and in some cases, those of what are called "light sleepers:" the same sense acts in going to sleep and in sleeping, so that any alteration in the conditions after a person has fallen asleep may distress or arouse him. It is important to bear these facts in mind, especially in dealing with children, who are often much worried, and even made seriously ill, by the clumsy kindness of reading or singing them to sleep, and then changing the conditions of rest

established by breaking off the lullaby, taking away the candle, and leaving them alone. What happens after this change is generally wakefulness, distress, and a second process of going to sleep scared or in sorrow, than which there is, perhaps, no more likely process to originate epileptic disturbances, unexplained weaknesses, and even disease? It would be better and wiser to train the senses to sleep naturally by forming a habit of "sleeping," independent of circumstances, and self-contained. Nothing would be gained by working out the application of these general principles to particular classes of cases. If the *rationale* of the relations that commonly exist between the sleeping body and its surroundings is understood, the reader will do this easily for himself.

4. It will be evident from what has been said that the constitution and training of mind is of great importance to the function of sleeping. Not only are the habits which facilitate or embarrass the establishment of sleep amenable to the influence of the Will, but orderly methods of thought tend to natural sleeping by leaving the consciousness free to rest when the accustomed hour of slumber arrives, without having to reason itself into a state of quiescence, which is a process fatal to easy sleep.

When the head is laid on the pillow, the mind should be at peace. Those who do not so order their lives and methodise their work, that the faculty of control may be at liberty to rest when the time comes to sleep, cannot expect to be good sleepers. Whatever the troubles or worry of the day, the place of rest should be sacred to pleasant or at least peaceful, thoughts. Let the book of life be closed, even on a blotted page, before sleep is sought. Thinking in bed is one of the most formidable obstacles to sleep. Nothing except a habit of dismissing subjects of thought at night can enable the mind to clear itself, at will, of disturbing and distressing entanglements. Sleeping is, so far as the consciousness and the sub-consciousness are concerned, a complementary state to waking. To secure the advantages of rest when sleeping we must discharge the obligations of duty and work while awake. One of the first and most pressing of these obligations is to "let all things be done decently and in order."

The best and most successful exercise of mental power is that which conforms most perfectly to the reign of law. Impulsive, spasmodic, emotional effort, albeit these forms of work are apt to be mistaken for the explosions of genius, ought to be discouraged. Work that depends on moods and feelings is worth-

less, or even injurious, as training to the mind.[1] Those who labour capriciously must needs expect to be uncertain sleepers. The mind should be trained to perform its daily task, however great or little that may be, as a matter of duty. The only healthy and happy state is one of discipline. Mere self-gratification, without method or purpose beyond the whim of the passing moment, is a sorry sort of enjoyment that commonly brings disappointment and mind-trouble in its train. Confusion of thought while awake produces sleeplessness from thought.[2] Nor is difficulty in sleeping the only or the worst consequence of disorderly brain-work. Sleep itself comes to be disorderly when the waking consciousness is uncontrolled. If the sub-consciousness is overworked by being made to perform the largest part of the mental duty of life[3] it will be apt to remain awake, and continue labouring at its task, while the consciousness and the various parts of the organic apparatus are asleep. Dreams of work, and worried and weary nights are the penalties for this error in mind-management. Sleeping is a function which only a sound mind in a sound body can healthily perform.

[1] See the article on "Work," in *Minds and Moods.*

[2] See paper on this subject in *Common Mind-Troubles.*

[3] Habit, *The Secret of a Clear Head.*

AWAKING.

THERE is not a great deal to be said on this subject, but it is one of high interest and of considerable importance. Awaking is the undoing of sleep; and, therefore, throws special light on the nature of the condition which has been established, and the measure and kind of repose enjoyed. Moreover, it helps to determine the subsequent value of the rest which has been obtained by restoring the organism easily to a waking state, or leaving the several faculties to struggle back to life like a panic-stricken crowd escaping from some scene of horror—perhaps a hideous dream—or to rush into the arena of action and consciousness in disorderly confusion, some weary, some excited, all unrefreshed, instead of marshalling the forces of energy into wakefulness with the steady control of discipline. As a matter of experience awakening is seldom performed in accordance with the rules of health, mental and physical. The precise nature of the process will, of course, depend on the form of sleep from which the transition takes place.

True sleep is, as we have seen, a state produced by the resting of several systems or parts of the physico-mental organism. "Le sommeil général

est l'ensemble des sommeils particuliers" (Bichat). The rest enjoyed by each system contributes its share to the general result, and the relative proportions of the several sleeps compounded determine the character of the phenomenon as a whole. Each or any of the systems may wake before the others, just as the repose of any part of the organism may be disturbed, and impair or even destroy, the quality of the sleep enjoyed. Thus, the organ of thought may wake first, because it has been simply lulled by the sympathetic influence of the other systems, and resume its activity the moment these parts of the body have so far recovered from their weariness as to sleep lightly. Early morning dreams often indicate this state. The supreme centres of consciousness were either too much engrossed with business or pleasure to rest, or were not weary. The automatic sub-consciousness may have been exhausted, the muscular system fatigued, the viscera in need of repose, and when these parts of the organism slept the brain was lured into a state of temporary quiescence, but quiescence is not sleep, and therefore general sleep, in its true sense, was not established. From such a condition the "sleeper" may be aroused at any moment after the subduing influence which holds the consciousness in abeyance has begun to

subside. A habit of waking as soon as the other systems are somewhat rested is readily formed by the brain, and in this way persons with either very active or insufficiently exercised minds come to suffer from sleeplessness occurring after a period of repose, the length of which will be determined by the weariness and consequent rest of some system or systems other than the brain.

It is important to determine in any case of wakefulness, occurring in the night or towards morning, whether the cause is a defect of cerebral sleep —that is rest of the thinking faculty—or habit. Obviously the means taken to remedy the evil must vary widely under different conditions. If the consciousness has not slept but simply dozed during the sleep of other systems, and roused the moment it was able to shake off their influence there must be some obstacle to cerebral sleep ; and no amount of exercise taken to fatigue the muscles, or of routine work to compel the automatic system to rest, and no special management of the viscera, can cure the wakefulness. Each or all of these methods of treatment may seem to be useful, but their effects can scarcely be more than transitory. For example, the muscular system may be so wearied that it shall sleep long and heavily, the consciousness being unable to shake off the

quieting influence, but little or nothing will be gained unless the cerebrum itself sleeps! The condition is only masked not remedied by prolonging the defective state. It is better to discover the real cause and deal with it directly, by removing the obstacle to, or creating a new habit of, cerebral sleep.

Either of the several systems may awaken the others; but what too commonly happens is partial awakening—that is, the rousing of one system without the others, and the substitution for sleep of a state prejudicial to the health. Referring to the subject of awaking in connection with the treatment of the insane, I have elsewhere insisted strongly on the importance of carefulness in this matter of rousing:—"The business of getting patients up in the morning is a serious piece of routine on which scarcely enough care is expended. There was, in old times, a superstition it might be almost worth while to revive for the special warning of attendants on the insane. It was believed that the soul left the body during sleep, and if recalled too suddenly it had not time to return, and the body woke minus the mind. There is a real danger in arousing the subjects of mental disease roughly, and compelling them to rise half awake to their duties. . . . . Such an awakening sours the temper

and inflames the imagination of irritable lunatics.[1] It is not less important to the interests of mental and moral health in the care of the sane to ensure that the whole of the being shall be awakened at the same moment, and the creation of a false state thereby avoided. Mischief may be done by either too sudden or too tardy awaking. In the case of children it is especially necessary to avoid rousing them roughly, but they should not be allowed to doze after the first call. Adults should make it a point of duty to overcome the habit of dozing. It is one of the most disastrous of lazy and morbid practices. The state into which the sluggard falls when he turns sullenly or irritably on his pillow is not "sleep," but a miserable burlesque of that state, in which his consciousness lies revelling in some debasing dream or knowingly neglecting the call of duty. It makes no sort of difference to the moral and mental effect whether there is any special need for rising. Being awake enough to know what is going on around him, a man has no right to linger on the borderland. In mind-management there is a golden rule of health which ought not to be forgotten: never do, or be, or seem to be, anything by halves. Perfect self-control and self-possession can only be

[1] *The Care and Cure of the Insane*, Vol. I, pp. 351-2.

secured by decision and thoroughness. If you sleep, sleep. Dozing is a half state, it is one of the by-paths to hebetude, and should be shunned. The sense of weariness and headache, with which most persons who doze in the morning are troubled, should suffice to show that the habit is physically bad. Its mental effects are equally injurious.

When the automatic system awakes before the mental, we get the phenomena and subjective symptoms of waking dazed or as in a dream. If the viscera are aroused before the consciousness, there may be morning troubles of a dyspeptic character, or connected with the excretions, or the organs of nutrition—for example, the abdominal pains of heavy, gross, irregular feeders, and persons who are addicted to the practice of drinking to excess, especially spirits, perhaps without the ordinary symptoms of intoxication. There is, also, a special form of morning cough, to which young persons are subject, and which is *not* the effect but may become the *cause* of lung disease. When a viscus awakes while the organism as a whole sleeps, it may become irritable and eject its contents without rousing the consciousness, or only so far as to occasion a dream. This is one of the obscure causes of troubles which are often set down to graver mischief, just as blundering in spell-

ing or the transposition of syllables is often too hastily interpreted as a symptom of cerebral disease, when, in truth, it is more likely to be a vicious automatic habit. The self-evident remedy for these distresses is to secure the repose of the particular viscus which has formed a habit of waking at an untimely season. This can generally be accomplished by some change in the time of taking food or drink, or the quality of the nutriment consumed.

The phenomena and subjective experiences of awaking will vary with the character of the sleep-state, the order in which the several systems are aroused, the process of awaking in respect to each of these systems, and the length of time it occupies. Thus, if the lungs are sluggish, or from any cause the normal waking-supply of oxygen to the blood is not rapidly and easily established, there will be yawning. The shortest way to put a stop to this annoyance is to breathe quickly and deeply for a few seconds so as to take in air with greater celerity. If the muscular system is slow to wake, or if it has rested badly, perhaps owing to a posture which has not properly relaxed the muscles, there may be stretching. Again, a too languid circulation in the skin, or a deficiency of the gland-secretions, will incite to rubbing and scratching when aroused. What are called "heavy" sleepers

suffer more from these annoyances on waking than those who are said to sleep "lightly;" but such troubles generally indicate excess of weariness in some particular tissue or a defect in the mode of sleep. Awaking is, as I have said, the undoing of sleep, and it throws great light on the nature of the sleep which has been enjoyed. It is, therefore, an interesting subject of investigation, besides playing an important part in the working life to which the sleeper is recalled. The maxims of health are—to wake quickly at the first gleam of consciousness, to resist the inclination to doze or dream, or fall into a state of reverie; to restore the functions, and to relieve the organs of the body without delay; to wash rapidly and thoroughly, and rub briskly to re-establish the circulation; to take some exercise, however little, before food; and to resume the control of thought as a master, not a subject, still less as a slave.

SLEEPLESSNESS.

LIKE loss of appetite, sleeplessness may be a precursory symptom of some growing disease, the effect of a morbid state, the temporary result of

disorderly habit, or the consequence of a perverted mode of life and nutrition. Personal hygiene requires the recognition of this always significant, often distressing and, not unfrequently, grave phenomenon under its several aspects, and a prompt reference to its true cause. We may note the salient features of the four varieties of sleeplessness indicated; inverting the order in which I have set them down, and considering the most manageable first.

1. Sleeplessness may be the consequence of a perverted mode of life and nutrition. If a person eats and drinks at odd times, and almost incessantly, he can have but little appetite for his meals. In the same way those who are perpetually dozing and droning the hours away may be indifferent sleepers at night. As a matter of observation, however, the sluggard, or systematic dozer, does not complain of sleeplessness. Habit lends him its aid, and he simply becomes a being with an apparently insatiable capacity for sleep. The organism of such a man is not developed up to the standard of physico-mental strength indispensable for a life of action. Efficiency of function is always dependent on exercise, and the apparatus of energy has not, in his case, been so worked as to be capable of sustained exertion. When this is forgotten, and the habitually inert are pressed and expected, and really *try*, to do with

less than their accustomed amount of sleep by day and night—for example, to rise earlier in the morning, or to dispense with some "nap" they are in the habit of taking, say after a meal—disappointment ensues. In truth, it is like expecting a delicately nurtured lounger to perform hard manual labour. It is not that he will not work, he is simply unable to do what is required of him! Mind and body need to be re-educated, and until this has been accomplished by wise management, or spirited self-help inspired by self-respect, it is cruel to anticipate any great reform. Parents and friends should bear this fact in memory for purposes of discipline and personal influence. Meanwhile there is a class of cases in which sleeplessness at night does present itself as a cause of distress to persons who have habituated themselves to a large amount of sleep, a considerable part of which is taken in naps in the morning or during the day.

As age creeps on progressively less sleep is needed. When the organism is no longer engaged in hard work it will not require so much rest. In infancy and childhood the formative processes tax the strength of the body. In adolescence and throughout adult life the amount of sleep should be proportioned to the energy expended. Later on, as the activities are reduced, the need for repose is further

diminished; until in old age sleep comes to be a luxury rather than a necessary of the waning life.

The remedy for sleeplessness as a night trouble in cases of irregular habit is to avoid sleeping by day. At first this will be difficult, and may cause considerable discomfort, because these habits of function are very strong, and it is hard to form new ones which shall supersede the old. Moreover, there is a distinct tendency on the part of the organism to cling to any acquired and personal custom, and if a habit of sleeping at short intervals during the day be once formed it is more likely to engender a habit of sleeping at short intervals during the night, than to leave the natural habit of continuous sleep during the hours of darkness undisturbed.

Underlying the disorderly or perverted customs of life, and created by them, are certain habits or modes of nutrition. The organism accommodates its own life—or, more accurately speaking, lives, for each organ may be said to have its own distinct existence—to the life of the being as a whole, and it is embarrassing to make any great change in either, because the others will not easily or quietly conform. For example, a man may mentally resolve to go to bed early and rise betimes, and to avoid sleeping during the day, but his automatic,

his muscular, and his visceral systems may resent the reform purposed, and at first refuse to carry out his behest. A rebellious automatic system may prevent sleep by rendering mind and body restive when the will enjoins quiet and courts repose. A muscular system indifferent to rest, because unwearied or in the habit of taking the ease it needs at irregular periods instead of continuously will disturb and prevent sleep by what is commonly called "restlessness" or "fidgets." The viscera, also, are prone to prevent sleep when they have been accustomed to perform their respective functions in a fashion, or at times, incompatible with the new regime it is desired to impose on them. All the organic habits will have to be changed, in order to cure the evil of sleeplessness springing from the cause we are now considering. The remedy must be addressed to each several seat of the disturbing habits, and to discover these, and make out the fault clearly, it will be necessary to observe the subjective symptoms of sleeplessness somewhat closely, even at the risk of doing a little mental and nerve mischief by concentrating attention on the evil to be cured.

What seems to be the exciting cause of the wakefulness? Is it bustle or worry of mind, irritation or pain of body, or simple lack of inclination or

ability to sleep? The intelligent conception of a successful method of cure—as distinguished from the accidental or empirical discovery of a remedy—will depend on the accuracy with which the *locale*, and nature, of the cause of sleeplessness is ascertained. When bustling or entrancing thought holds the consciousness awake in spite of weariness, the experience will generally consist in a feeling of fatigue, for which rest is much desired but cannot be obtained. The sleepless head lies waiting—at first patiently and expectantly, then uneasily, and at last irritably—on its pillow, but the relief of unconsciousness does not come. If thought for a moment seems to drift and become dreamy, the supreme faculty quickly resumes control, and the transition to sleep is abruptly arrested. The repetition of this mental starting—which must be distinguished from muscular starting—so excites the mind by opposing the will, that, after trying to sleep for some time, the prospect of success is less than it was at the outset, and, wearied out, the sufferer is tempted to rise. If there were any lack of the sense of fatigue, or of muscular weariness, of which we will speak presently, it would be wise to yield to this impulse, and by reading to tire the eyes, or by walking to weary the muscles, and so court sleep through exhaustion; but nothing can be gained

by increasing the fatigue of parts of the organism which are already desirous to sleep if the consciousness would only allow them to do so.

If simple worry of mind be the cause of this form of sleeplessness—namely, mental wakefulness—the distress will be of the same kind but more disastrous, because, while the mind is strained and injured by untimely exercise, the body is being seriously exhausted from want of rest. The treatment for this malady should be mental; the mind must be trained to compose itself if it be the seat of causeless bustle or too holding thought, or it ought to be relieved of its burden, or brought to bear it patiently, if worried or distressed. To fly for relief to drugs and stimulants when the mind is riotous, racked, or distressed, is an act of folly unworthy of a rational being, and can only be excused by ignorance. This is not the place to animadvert on the practice of *prescribing* "sleeping draughts" in such cases, but the custom of taking them is one against which the sleepless from mental causes need to be warned. The will should be called upon to subjugate the turbulent, or to compose the troubled consciousness.

Another cause of wakefulness at night is the baneful habit of "fancying," a development of the "make-belief," which covers half the field of self-

consciousness in childhood. Young persons of what is called a "romantic" turn of mind, and many who are little suspected of this tendency, lay up a store of sorrowful sleeplessness for themselves by the practice of *imagining* whenever they are alone, and especially when going to sleep. At first the habit seems harmless, and it is hoped the dreams may partake of the nature of the latest thoughts—which seldom happens. However innocently the habit may begin, it readily becomes morbid, and, before long, the subjects of thought come to be depraved and debasing. Sleep is delayed, and at length hour after hour passes without, as it seems, "closing the eyes;" and all the time the sleepless mind is rioting in chambers of imagery enervating and demoralising. When this takes place in youth, there is almost sure to come a time, in after years, when the same hours, which were once so badly appropriated, will be passed wearily wooing sleep. Much of the sleeplessness of adult and elderly life is really of this nature; and if the penalty were recognised in its true light, and borne patiently instead of peevishly, relief would come more rapidly and with less injury to the mind than when the experience is not understood, and clumsily met by a restless or reckless recourse to remedies which, being inappropriate, increase the evil it is

desired to remove. In short, having ascertained that the cause of sleeplessness is mental, it remains to treat it mentally ; and the counsel of a wise friend to whom the *whole* truth can be told, will often do more than anything else to relieve the suffering. Orderly habits of thought,[1] practical views of life and its responsibilities, the institution of a regular system of mind-feeding, with good intellectual food and regular feasts of reason, will cure most of the sleeplessness that springs from causes located in the consciousness and betrays its real nature by the symptoms I have sketched.

Sleeplessness from habitual wakefulness of the automatic system, in which the special-sense organs with their functions must be included, is generally to be recognised by a disposition to see, hear, feel, or do things—mentally or in thought—which disturb the consciousness and prevent sleep. Persons so affected start up fancying they see visions, hear noises or voices, feel movements, or are themselves flying or falling, and so awake when they ought to sleep. There are many varieties of this automatic sleeplessness, and the experiences to which it gives rise are as diverse as phenomena arising from a single cause can be. Relief will generally be found in tiring one of the

[1] See the paper on "Sleeplessness from Thought" in *Common Mind-Troubles*, and that on "Spirit-land" in *Minds and Moods*.

sense-organs. Those who are much troubled with this form of sleeplessness should read themselves to rest, use a musical box, or perform some automatic work, such as knitting or sewing until they fall asleep. Chess-playing, reading aloud, a single game at cards, will often prove a good soporific if employed *immediately* before retiring to rest, and not followed by distracting conversation, or anything that too strongly engrosses the mind and unwittingly leaves the sub-consciousness at work. When the cause of sleeplessness lies in the muscular system, that must be exercised with appropriate labour, so timed that weariness may occur at the customary hour of sleep, and not be allowed to wear off by resting before sleep is sought. The practice of lying stretched on a sofa when fatigued in the evening, is a fruitful source of sleeplessness of the muscular kind, indicated by twitchings, cramps, and fidgetty movements that prevent sleep. Persons who suffer from cramp in the extremities should lie low at the feet.

The visceral causes of sleeplessness are overloading of the stomach, and digestive organs, by excessive feeding, and irregular habits with regard to the evacuation of the contents of the several organs. In respect to this last-mentioned matter, the management of the dejections, perfect regularity

is indispensable to health, and that is not to be compassed by medicines, but by orderly customs of life, which should be wisely formed, and rigorously observed. This is a frequent occasion of disturbance which should on no account be overlooked. It is possible, as was noticed under another heading, to so fatigue the several organs by overloading, or not relieving them, that they fall asleep too heavily, and set up irritation by becoming, as it were, dead weights in the system.

We have thus far been speaking of sleeplessness from perverted modes of life and nutrition; the several parts of the organism having ways of their own, which prevent all being in a condition to rest at the same time, and, therefore, general sleep is impossible. Work, nutrition, and repose should, so far as may be possible, go on simultaneously in the several organs and systems. Such harmony constitutes the habit of health. The remedy for sleeplessness of this variety is, in principle, the formation of new habits which will harmonise the processes of function, rest, and nutrition throughout the system, and indirectly cure the evil by replacing the old and vicious habits on which the trouble of sleeplessness depends.

2. Disorderly habits may be set up by circumstances; for example:—1. A particular cause of

anxiety, a special press of business or run of mental dissipation. 2. Some exceptionally disturbing force falling on the automatic system and sense-organs. 3. An unusual strain upon the muscular system which is resented because the muscles have not been properly trained to the exertion required of them. And 4, inordinate or irregular taxing the powers of the viscera, by unaccustomed, or excessive, eating and drinking, either overfeeding or starving particular viscera or the system in general. Any of these misfortunes or errors will produce sleeplessness, and even when the cause may have ceased to operate—for example, after watching by the bedside of a sick person through a protracted illness, or after dissipation which has been abandoned, in fact, after any disturbance of sufficient duration to set up a habit—the effect may remain. It is in these cases drugs expertly employed are sometimes useful, but the practised skill of the acute physician is needed to search out the seat of the pernicious habit, and determine how or where it may be interrupted. If this be accomplished, it will remain for the sufferer to recover the old habits of health, or to form new ones consistent with the life he is compelled to lead.

3. Sleeplessness, as the effect of a morbid state, is a symptom of existing disease with which, in this little manual of health, I have no immediate concern.

The only useful hint it seems possible to give is not to forget that the trouble we are considering may be a very significant symptom ; and it is one which ought never to be disguised from the medical attendant, because it may form part of the "indications for treatment" in any disease. Again, being a symptom it must not be regarded, still less treated, by the sufferer himself, as a separate malady. We frequently hear of patients taking "sleeping draughts," habitually, for the relief of sleeplessness which, although they are not aware of the circumstance, is an integral part of some state wherefrom it cannot be disassociated in remedial management with any prospect of success.

4. Sleeplessness may be, and often is, a premonitory symptom. When it occurs without any discoverable cause, and cannot be cured by the methods of self-help to which I have alluded, there should be no delay in seeking advice. Sleeplessness means *restlessness*, and without due repose there can be neither safety, comfort, nor health.

The principles of conduct which I have tried to lay down are necessarily broad, and require to be applied with greater precision in any special instance, than a general statement of their nature can suffice to indicate. Enough has, however, been said to point the reader to the main lines of re-

covery, and to warn him against the serious perils to be avoided in the escape from disease. I can never too strongly insist that the sole legitimate purpose of the physician who dares to address the public is to preach the gospel of health, not to promulgate what must necessarily be inadequate and impracticable notions of treatment among those who are not armed with that knowledge of the organism and its functions in health, which alone can qualify any one to treat it in, and for, disease.

SLEEP AND FOOD.

THE relations between sleeping and feeding have been incidentally alluded to in the course of the previous chapters. In conclusion, we may set out as concisely as possible the principles underlying those relations, a knowledge of which can scarcely fail to be useful in the ordering of a daily life.

It has been commonly supposed that the tendency to sleep which often follows a meal is due to the attraction of blood to the stomach by the food and a relatively bloodless state of the brain. This theory is, I am convinced, erroneous. Blood may be "drawn away from the head," as the phrase goes, by other causes, and sleep will not

follow! Speaking generally, after-dinner naps are, I think, referable to habits personal or ancestral, or they are the direct effect of the food and drink taken on the nerve-centres, producing sleep by some specific influence, instead of by the circuitous process alleged to be the mode of their causation.[1]

[1] It is with food, I believe, as with drugs, often supposed to produce sleep by inducing an anæmic or bloodless condition of the brain. Vulpian sums up the results of a series of carefully made and admirably recorded experiments with chloroform, ether, opium, and chloral, administered separately, and in some cases in combination, as follows:—"Le sommeil chloralique n'est donc pas dû, plus que celui qui est provoqué par l'ether, le chloroforme ou l'opium, à une anémie ainsi produite dans le cerveau. Nous pouvons donc dire que l'action hypnotique des diverses substances, que nous avons étudiées sous ce rapport, s'exerce sans que les effets qu'elle produit puissent être rattachés à des modifications vasculaires des centres nerveux. Ces substances n'agissent pas, en effet, sur ces centres, par l'intermédiare des vaso-moteurs, comme on l'a admis sans la moindre preuve directe; c'est sur les éléments anatomiques mêmes des centres nerveux que porte leur influence. Ce sont ces éléments qui sont directement modifiés, probablement parceque les agents en question y pénètrent et y produisent une altération histo-chimique." When articles of food act as soporifics, they doubless operate in the same way directly and specifically on the nerve centres. It is also possible that there may be a reflex action on the medulla and brain through the pneumo-gastric nerve; besides which an associative influence is likely to be exerted through the sympathetic. I make no apology for introducing these technical details. Most intelligent readers know something of physiology, and this is one of the matters relating to *health*, not disease, which cannot be too generally understood.

Some articles of diet, for example lettuces, contain a distinctly soporific principle resembling opium in its effects.[1]

Speaking generally, however, it may be concluded that the mental and physical result of having fed comfortably creates a feeling of satisfaction that conduces to sleep, and a habit of sleeping after meals is, therefore, readily formed. It is, nevertheless, injurious to give way to this inclination. Notwithstanding all that has been said and written about digestion taking place during sleep, it cannot certainly proceed so rapidly or healthily when the circulation is slow and the glandular system inactive as while the organism is awake and moderately exercised. Therefore the aim should be to feed well and leave a sufficient interval after the last heavy meal to allow of the food taken being digested *before* retiring to rest. With a view to help the reader in carrying out this intention, I will reproduce the conclusions at which physiologists have arrived as to the length of time a few of the more ordinary articles of food require to digest. From Beaumont's well-known table we may derive the following information:—

[1] The lettuce has been famous since the time of Galen, who believed himself to have found relief from sleeplessness by taking it at night.

Tripe and pigs' feet should digest, so far as the stomach is concerned, in *one hour*. Scarcely any other article of food disappears so rapidly.

Fresh eggs whipped, fresh salmon trout boiled or fried, venison steak broiled (1.35), barley soup boiled, sweet mellow apples, and brains (1.45) take *one hour and a half*, or a few minutes more to digest.

Milk, eggs, raw, or roasted (2.15), codfish (cured dry) boiled, and sour apples take *two hours* or a little over.

Soft boiled eggs (3.00), baked custard (2.45), oysters raw (2.55), sucking-pig roasted (2.30), lamb broiled (2.30), beef underdone, roasted (3.00), or broiled (3.00), also boiled if eaten with mustard (3.10), eaten with salt only (3.36), mutton broiled or boiled (3.00) roasted (3.15), salt pork stewed (3.00), pork broiled (3.15), turkey wild (2.18), domesticated (2.25), goose wild (2.30), chicken fricasseed (2.45), bread (3.15), most soups (3.00 to 3.30), and ordinary vegetables, take from *two hours and a half* to *three hours*; for some simple articles, *e.g.*, fresh wheaten bread (3.30), the period is *three hours and a half*.

Roast pork (5.15) and boiled cabbage (4.30) may stand for a class of food which takes about *five hours* to digest, and the time required for the disposal of fried beef, veal, duck, domesticated or wild, soup

made of beef vegetables and bread, marrow-bone soup, and a dish so commonly deemed digestible as fowls, whether roasted or boiled, is *over four hours.*

Some of these statements may occasion surprise, but, it is desirable the facts should be recognised. The time occupied in digestion is not, of course, the only matter to be considered in estimating the relative value of different kinds of food ; but if, as I contend, digestion should be complete, or very nearly complete, as to the process which takes place in the *stomach*, before sleep is attempted, it follows that a meal taken within two hours of going to bed should be light, and some of what are considered the simplest articles of diet ought to be avoided.

The sleep induced by heavy feeding is not natural, while that which follows upon the use of stimulants is, beyond question, a condition of blood-poisoning and stupor. It may be expedient in some cases to produce this stupor, but it should be understood that the state into which the brain is thrown is not *sleep*, and if natural sleep follows, that is a contingency, not the primary effect of the food eaten or the alcoholic beverage imbibed.

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